eclipses, and the constellations in which the planets reach their hypsomata, the question is whether or not the illustrations also reflect any eclipse mythology. If they do, the following observations are offered:

1. Fig. 8 shows the illustration (following Weidner) of VAT 7851 obverse in which the Pleiades (the "Seven") and Taurus relate to the month in which the eclipse occurred. As to the lunar disk, Weidner described it as displaying Marduk (as the Man in the Moon) grasping a lion's (= demon's) tail. Weidner does not connect the lunar picture with the eclipse myth of *utukkū lemnūti* XVI, but he does connect the Man in the Moon with certain notions about eclipses.

2. The illustration on the tablet VAT 7851 is poorly executed on the original, as Weidner observes. A closer look, however, even at the photo in Weidner's plate, inclines the present writer to an interpretation different from Weidner's. Fig. 9 shows a reconstruction of the lunar disk in a state of siege by a serpentine demon/dragon who is coiled around the moon's perimeter. Marduk (alias Jupiter?) is shown rescuing the moon. he holds a magic (Ashwood?) club in his right hand (see CAD E p. 319 sub 3' for the *e'ru*- wood club and note line 201 of *utukkū lemnūti* XVI above); he holds a rhomb-shaped dagger in his left hand with which he stabs the dragon; his left foot appears to be standing on the dragon's tail.

3. VAT 7847 depicts Jupiter, Hydra and Leo on the obverse (see Fig. 7, after Weidner); Hydra's tail (continued around from the obverse) with Corvus (the Crow) pecking in it, Mercury and Virgo (holding the ear of the grain plant, her symbol), are depicted on the reverse. In support of the possibility that the representation of Hydra on this tablet was also intended to evoke the mythology about lunar eclipses and dragons is a scene on a Neo-Assyrian cylinder seal drawn to my attention by Prof. Azarpay:

4. NA seal in the Pierpont Morgan collection, No. 688E in E. Porada, *Corpus of Ancient Near Eastern Seals*, vol. I, plate CI. See Fig. 10. In this scene a running god (Marduk?) chases and catches up with a dragon identical to that of VAT 7847; he stabs it in the head with a pointed dagger in his right hand. Note the presence of the lunar crescent and a star-cluster whose shape is that of the pleiades. The other features may or may not be evocative of the myth: the ear-of-the-grain plant pinioning the dragon's tail (cf. the crow pecking in the dragon's tail on VAT 7847 rev. and Marduk's foot planted on the tail in Fig. 8); the male figure whose hands prepare to catch one of the loose stars (cf. Mercury's presence in VAT 7847 rev.); the female figure whose hands prepare to catch the solar(?) disk (cf. Virgo in VAT 7847 rev.). Are the three loose stars/globes (or is one the handle of the dagger?) meant to represent three members of the pleiades who have broken loose from the cluster?

5. If the illustrations as shown in Figs. 7, 8, 9 and 10 are relevant for a tradition about an "eclipse dragon," it should be noted that the relationship with *utukkū lemnūti* XVI is not a direct one, for in that story the seven demons (of which two are dragons: *ušumgallu* and *šibbu*) are said to encircle the moon and cause its eclipse. In the pictorial evidence adduced here, a single dragon is involved. Moreover, as Prof. Heimpel wisely cautions, the astrological symbols are used in so many contexts—many not understood by us—that they can lead us on a merry but inconclusive chase.

Survey

MODERN PERSIAN VERB MORPHOLOGY
(Fārsī)

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The morphological structure of the Modern Persian verb can be described as a six-slot string of constituents, with each slot rewritten as a pair of features or as a phonological matrix. Some of the features, all of which are necessary for semantic and syntactic rules, are not interpreted as phonological matrices, and emerge as phonetically null. Inflectional affixes are spelled directly as phonological matrices. Morphophonemic alternations in verb stems which are regular are described by general rules which operate on phonological and/or morphological features. Irregular alternations are described by minor rules for which formatives must be marked, their unmarked value being "minus;" the unmarked value of general rules is "plus." Minor rules describe suppletive alternations as well as unique but non-suppletive ones; verbs which undergo both minor and general rules are so marked.

0 The division of the lexicon of Modern Persian into morphological subclasses or "parts of speech" is rather fuzzy.[1] Verbs, however, are clearly marked by the inflections peculiar to them and by certain morphophonemic alternations which are exhibited nowhere else in the language. There are remarkably few verbs in Persian: excluding derived causatives, only 234 verbs appear in Haïm's *Shorter Persian - English Dictionary* (Tehran, 1963), which can be expected to include every verb in the language to 1963. In Tehran Persian (TP), new verbs are added to the *i*-class (see section 2.3); in Kabul Persian (KP), the language of which this paper is a partial description, new verbs usually take the form of a substantive plus an empty verb *kardán* 'to do' or, for intransitives, *šudán* 'to become', e.g., *punčár kardán* 'to puncture' and *punčár šudán* 'to be punctured'.

KP differs from TP in several ways, chiefly in the conservatism of its vowel system. The symbols that I shall use for the phonemes of KP, and the distinctive features that "spell" them, are shown in (1).

[1] V. S. Rastorgueva, *A Short Sketch of the Grammar of Persian*. Trans. by Stephen P. Hill, ed. by Herbert H. Paper (Bloomington: Indiana University Research Center in Anthropology, Folklore, and Linguistics, 1964), p. 16; cf. A. Jazayery, Review of *A Short Sketch of the Grammar of Persian*, by V. S. Rastorgueva, *Language* 41 (1965), pp. 311-312.

(1)

	p	b	f	w	m	t	d	s	z	l	r	n	č	j	š	y	k	g	q	x	γ	ʔ	h	i	ī	ě	a	ā	ō	ū	u
Consonantal	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−
Syllabic	−	−	−				−	−	−	−	−	−		−	−	−	−	−	−	−	−			+	+	+	+	+	+	+	+
Sonorant	−	−	−	+	+	−	−	−	−	+	+	+	−	−	−	+	−	−	−	−	−	−	−	+	+	+	+	+	+	+	+
Nasal	−	−	−	−	+	−	−	−	−	−	−	+	−	−	−	−	−	−	−	−	−			−	−	−	−	−	−	−	−
High		−	−	+	−	−	−	−	−	−	−	−	+	+	+	+	+	+	−	−	−			+	+	−	−	−	−	+	+
Low	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−			−	−	−	+	+	−	−	−
Back	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+			−	−	−	−	+	+	+	+
Anterior	+	+	+		+	+	+	+	+	+	+	+	−	−	−		−	−	−	−	−										
Coronal	−	−	−		−	+	+	+	+	+	+	+	+	+	+		−	−	−	−	−			−	−	−	−	−	−	−	−
Lateral						−	−	−	−	+	−		−	−	−																
Round	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−			−	−	−	−	−	+	+	+
Voice	−	+	−			−	+	−	+				−	+	−		−	+	−	−	+										
Tense																								+	−	+	−	+	+	+	−
Continuant	−	−	+			−	−	+	+				−	−	+		−	−	−	+	+	−	+								

In chart (1), blanks represent inapplicable features or prohibited contrasts, rather than redundancies. Reference will often be made in the discussions which follow to three styles of speech: Formal (F), Deliberate (D), and Colloquial (C). These three styles, all of which are parts of the competence of any educated native speaker of KP, are integral parts of a description of the morphology and phonology of the language.[2]

The most exhaustive study of Persian verb stem alternations is Hodge's,[3] in which six classes (and many subclasses) are distinguished, ranging from invariant to suppletive stems. While Hodge correctly observes that this classification can best be made on the basis of the present stems, he also states that "there is no predictability in the absolute sense" (p. 119). This is rather extreme: it is absolutely predictable, for instance, that no Persian verb will be found whose past stem ends in a voiced obstruent, and that no alternation between a vowel and an obstruent will be found. In general, though, the regularities are few, and almost all are contradicted by one or two exceptions.

The first section of this paper is a description of the morphological structure of the KP verb, and the second is an attempt to account for stem alternations, with suggestions for the description of exceptions.

1. Structure of the verb

The complex Old Iranian tense system has been almost entirely replaced by periphrastic constructions.[4] What is of interest in this morphological study is the six-slot constituent of these constructions which contains the verb stem and is separated from other constituents of the verb phrase by word boundaries. It is arranged as follows:

(2)

(NEG) ASPECT STEM TENSE (PART) AFFIX

A causative morpheme whose phonological shape is *ân* is inserted before "TENSE" in some verbs, and after it in others. This is unpredictable, and verbs must be marked for the placement of the causative infix.[5] The causative is of little morphophonemic interest, and will not be discussed further here. The remainder of this section is a discussion of the six slots shown in (2).

1.1 NEGATIVE

The first slot is "NEG," which has the phonological shape *n* if the next segment begins with a low vowel in C, and *na* everywhere else, including before low vowels in D and F. F and D *naâmad* 'he did not come' is *nâmad* in C, but *nabûd* 'he wasn't' is the same in all three styles, as is *naistâd* 'he did not stand'. The underlying form of NEG, which will be "spelled" by a rule triggered by the semantic-syntactic feature [+ negative], can be represented as |na|, the 'a' being deleted before low vowels in C by rule DKP (7), which deletes one |a| next to another or next to |â| in just the way described here.[6]

1.2 ASPECT

The two overt aspect markers in KP are the nonperfective and the optative (the latter is called the "imperative" in most grammars, but its use in KP includes nonimperative as well as imperative meanings). Rather than saying that the perfective, which is not represented phonologically, is realized as zero, it seems better to include in the grammar rules such as the following:

(3)

$$\text{ASPECT} \rightarrow \begin{Bmatrix} [\pm \text{perfective}] \\ [\pm \text{optative}] \end{Bmatrix}$$

The brace notation indicates that the two are mutually exclusive. Spelling rules are triggered by the features as follows:

(4)

(a) $[-\text{perfective}] \rightarrow |mE|$

(b) $[+\text{optative}] \rightarrow |bV|$

since [+ perfective] and [− optative] are not mentioned in (4), they have no phonological manifestation. See Harris[7] for a discussion of this approach to verb morphology, which allows syntactic features to operate in the ways required by the syntactic rules while allowing the phonological component's rules simply not to mention the spelling of non-overt categories. The cumbersome use of zeroes surrounded by formative boundaries is thus avoided.

It is interesting to note that nonpast forms rarely occur without the nonperfective marker. Persian grammars list forms such as *bâfam* 'I weave', but remark that forms such as *mêbâfam* 'I am weaving' have assumed perfective as well as nonperfective meaning, and that the latter have replaced the former almost everywhere.[8]

The nonperfective marker |mE| contains a vowel which appears as *i* before stems beginning with two consonants, as in *mifrušam* 'I am selling', and *ê* elsewhere, as in *mêsâzam* 'I am building'. This alternation cannot be predicted on the basis of stress, since the marker is always stressed; the underlying representation must contain a vowel unspecified for the feature [high], which will be specified by the rule which spells the formative (the feature [tense] is redundantly "plus" in mid vowels in KP). (4a), then, should be revised as follows:

(5)

$$[-\text{perfective}] \rightarrow \begin{bmatrix} +\text{consonantal} \\ +\text{nasal} \\ +\text{anterior} \\ -\text{coronal} \end{bmatrix} \begin{bmatrix} \text{V} \\ \alpha\text{high} \\ -\text{low} \\ -\text{back} \\ +\text{stress} \end{bmatrix} / __ + \alpha \langle CC \rangle V_0 C_0$$

That is, if the verb stem begins with two consonants, the vowel is [+ high] *i*; otherwise it is [− high] *ê*.[9]

The optative marker |bV| contains a vowel which appears as *i* before stems in which the first vowel is [− back], and *u* before stems in which the first vowel is [+ back]. Note that unlike the epenthetic vowel described by rule DKP (2), it is not conditioned by the roundness of the next vowel. Given the stem |štâb| 'to hurry', the epenthetic vowel will be *i*, as in *šitâftam*, since |â| is nonround at the underlying level; but the vowel of the optative marker will be *u*, since |â| is [+ back], producing *bištâbîm* 'we must hurry'. (4b) is accordingly revised as follows:

(6)

$$[+\text{optative}] \rightarrow \begin{bmatrix} -\text{sonorant} \\ +\text{consonantal} \\ +\text{anterior} \\ -\text{coronal} \\ -\text{continuant} \\ +\text{voice} \end{bmatrix} \begin{bmatrix} \text{V} \\ +\text{high} \\ -\text{low} \\ -\text{tense} \\ \alpha\text{back} \\ +\text{stress} \end{bmatrix} / __ + C_0^2 \begin{bmatrix} \text{V} \\ \alpha\text{back} \end{bmatrix}$$

1.3 STEM

Nonsuppletive verb stems are listed in the lexicon in a single underlying form. The allomorph that appears at the surface is conditioned by (a) the presence or absence of the past marker and (b) the general phonological rules of the language. The stems of Persian verbs and their alternations are discussed in detail in section 2 of this paper.

1.4 TENSE

Persian verbs are either past or nonpast in form. A rule for this will look like the following:

(7)

$$\text{TENSE} \rightarrow [\pm \text{past}]$$

A further rule spells [+ past] as |T| (what *t* and *d* have in common): |T| appears as *t* after obstruents and *d* after sonorants:

[2] For a description of the phonological correlates of these three styles, see Michael M. T. Henderson, "Diglossia in Kabul Persian Phonology," *JAOS* 95. 651–654 (1975). I shall refer to this description in the text below as DKP, and to the various rules presented therein as, e.g., DKP (2), meaning the second rule given in that article. For a discussion of inapplicable features, see Michael M. T. Henderson, "Redundancy, Markedness, and Simultaneous Constraints in Phonology," *Language* 52.314–325 (1976).

[3] Carleton T. Hodge, Review of *Grammaire du persan contemporain*, by Gilbert Lazard. *Language* 33 (1958), p. 119.

[4] James Darmesteter, *Études iraniennes* (1883, rpt., Amsterdam: Philo Press, 1971), chapter V.

[5] A. G. Farhâdi, *Le persan parlé en Afghanistan: grammaire du kâboli* (Paris, Klincksieck, 1955), pp. 89ff.

[6] I shall cite underlying forms between vertical bars, and surface phonemic representations in italics.

[7] James W. Harris, *Spanish Phonology* (Cambridge, Mass.: MIT Press, 1969), chapter 3.

[8] Ann K. S. Lambton, *Persian Grammar* (Cambridge: Cambridge University Press, 1957), p. 25.

[9] For the Greek letter angle bracket notation, see Robert T. Harms, *Introduction to Phonological Theory* (Englewood Cliffs, N. J.: Prentice-Hall, 1968), p. 71.

(8)

$$[+\text{past}] \rightarrow \begin{bmatrix} -\text{sonorant} \\ +\text{consonantal} \\ +\text{anterior} \\ +\text{coronal} \\ -\text{continuant} \\ \alpha\text{voice} \end{bmatrix} \;/\; [\alpha\text{sonorant}]\;[\text{Verb} + __]$$

Thus the stem [kuš] 'to kill', which ends in an obstruent, has the past marker *t*, as in *koštam* 'I killed'. The stem [kan] 'to dig', which ends in a sonorant, has the past marker *d*, as in *kandam* 'I dug'.

Since rules like (5), (6), and (8) spell the relevant grammatical formatives directly, there is no need for intermediate representations such as [mE], [bV], or [T]. These representations are used here for expository purposes only.

1.5 PART(ICIPLE)

Persian verbs have two participles, past and present. It seems best to view "PART" as one morpheme, whose form is specified by the rule which adds it to the tense morpheme. The past participle used to be *ta*, added directly to the verb stem (Darmesteter, p. 219), but there seems to be no reason, in a synchronic analysis, to regard it as anything but [a], added to [T]. The present participle is [ân], added directly to the verb stem, since [− past] is phonologically null. The rule will look like this:

(9)

$$\text{PART} \rightarrow \left\{ \begin{array}{ll} \begin{bmatrix} \text{V} \\ +\text{low} \\ -\text{tense} \\ +\text{stress} \end{bmatrix} \;/\; [+\text{past}] + __ & \text{(a)} \\ \begin{bmatrix} \text{V} \\ +\text{low} \\ +\text{tense} \\ +\text{stress} \end{bmatrix} \begin{bmatrix} +\text{consonantal} \\ +\text{nasal} \\ +\text{coronal} \\ +\text{anterior} \end{bmatrix} \;/\; [-\text{past}] + __ & \text{(b)} \end{array} \right.$$

The present participle is of limited interest in this study: in the first place, it has no affixes added to it, and so plays an inactive role in the morphophonology of the verb. In the second place, its use seems to be quite restricted, and it may be a frozen form in combination with only a few stems, in which case part (b) of (9) should be deleted. Farhâdi states (p. 108):

> Parfois la part. prés. fait, en tant qu'adjectif adverbial, partie du vocabulaire de la langue, bien que celle-ci n'ait pas gardé le verbe correspondant.

The past participle, on the other hand, is productive, and it affects the affixes added to it, as will be shown in the following section.

1.6 AFFIX

The inflectional affixes of Persian verbs, representing three persons and two numbers, vary according to the style of speech as well as according to the formatives to which they are attached. In this section I shall describe the F and D variants first, and then the C variants.

1.6.1 In nonpast forms, the affixes are attached directly to the verb stem; in past forms, the affixes are attached to [T]; and in past participial forms (which I shall call simply "participial forms"), they are added to [Tâ]. The following paradigm shows the F variants, attached to the stem [bâf] 'to weave':

(10)

		present	past	participial
	1	mébâfam	bâftam	bâftâam
Singular	2	mébâfî	bâftî	bâftâî
	3	mébâfad	bâft	bâftâast
	1	mébâfîm	bâftîm	bâftâîm
Plural	2	mébâfêd	bâftêd	bâftâêd
	3	mébâfand	bâftand	bâftâand

The forms in (10) show that all of the suffixes except the third singular are the same no matter

what they are attached to, but the third singular is *ad* after the stem, null after [T], and *ast* after [Tâ]. The lack of a third person singular affix in past forms is the result of a Middle Persian process by which affixes were added to original participles in all but the third singular (Darmesteter, p. 223). The Pahlavi paradigm of the past tense of the verb 'to weave' had *waft* for all persons; later, affixes were added to all but the third singular forms in the continuing change from "ergative" to "nominative" agent forms.[16] Similarly, the participial forms were (and are) made up of the participle plus the reduced form of the copula; the latter is identical to the other affixes in all persons except the third singular, in which it is the same as the full form, *ast* (Darmesteter, p. 231). It seems from these facts that no one base form can be posited for the various third person singular affixes, but that the two overt forms should be spelled directly, as follows:

(11)

$$[3\ \text{pers}] \rightarrow \left\{ \begin{array}{l} [\text{ad}] \;/\; [-\text{past}] + [-\text{plural}] \\ [\text{ast}] \;/\; [+\text{past}] + \text{PART} + [-\text{plural}] \\ [\text{and}] \;/\; [+\text{plural}] \end{array} \right\}$$

Since the environment [+ past] with no "PART" after it is not mentioned in (11), no rules will apply to it and there will be no phonological realization of this category.

Now the following underlying forms can be given for the affixes:

(12)

	1	am
Singular	2	î
	3	ad, ast
	1	îm
Plural	2	êd
	3	and

Farhâdi (p. 78) lists forms identical to these as the classical phonemic shape of the affixes—I interpret this as further support for the analysis given here, in which, of course, the affixes are not present in the lexicon but are spelled by transformational rules.

1.6.2 The C variants of the affixes are different from the F and D variants. The differences are shown in (13):

(13)

		F, D	C
	1	am	am, êm
Singular	2	î	î
	3	ad, ast	a
	1	îm	îm
Plural	2	êd	ên
	3	and	an

The third person forms, singular as well as plural, could perhaps be derived from the non-Colloquial varieties by an extension of rule DKP (13), which deletes some word-final coronal stops. The second person plural affix is *êd* in F and D. Farhâdi suggests (p. 78) that the C form *ên* may be derived from an earlier *ênd*, a formation analogical to *and*. In any case, this affix must be derived either from [êd] or from a different underlying form. Similarly, the C first person singular affixes, *am* after non-participial forms and *êm* after participial forms, must be derived either from non-Colloquial [am] or from some other underlying form. Farhâdi says (p. 79) that *êm* is a combination of the participial *â* and the affix *am*. I doubt that this is correct, because it would be the only instance in the language of two [a]'s coalescing to *ê* rather than to *â*, but Farhâdi's suggestion (p. 13) that "la langue évite ainsi les confusions sémantiques" should perhaps not be dismissed out of hand.

The positing of separate underlying forms for stylistic variants was rejected in DKP (p. 653), on the ground that the variant forms can be heard uttered by the same person in close juxtaposition, so I will conclude that the derivation of C forms from the same forms that underlie F and D variants is correct, and that somewhere in the grammar rules of the following type appear:

(14)

(a)	am	→	am, êm
(b)	êd	→	ên
(c)	and	→	an
(d)	ad, ast	→	a

The participial vowel must be deleted in C; this rule must be different from DKP (7), because the participial vowel is stressed and thereby escapes DKP (7). The rule, which must refer to morphological features, looks like this:

(15)

$$\underset{1}{\text{PART}} + \underset{2}{\text{AFFIX}} \Rightarrow \underset{1}{\emptyset} \quad \underset{2}{[+\text{stress}]}$$

[16] Wm. Geiger, "Die Passivconstruction des Präteritums transitiver Verba im Iranischen," *Festgruss an Rudolf von Roth* (n. p., 1893), pp. 1-5.

2 STEM ALTERNATIONS

Persian verbs typically exhibit alternations in the last one or two segments of their stems. Reference has already been made to the most thorough treatment of Persian verb stem alternations to date, Hodge (1958). The usual treatment is to divide the verbs into several classes; the "regular" class consists of invariant stems; the other classes consist of alternating and suppletive stems. The "regular" verbs are a closed class of twenty-three members.

Whether or not Persian speakers have convenient base forms stored in their brains is, of course, undiscoverable. While it is quite likely that they have base forms for some verbs and sets of memorized allomorphs for others,[11] it is impossible to tell from their performance which are which, just as it is impossible to tell whether an English speaker has memorized *write* and *wrote* separately or derives both from a single underlying form. But the descriptive linguist, these days, sets up base forms which reveal as many of the phonological regularities of the language as possible because, so the argument goes, a simple listing of allomorphs treats predictable alternations in the same way as it treats suppletion.[12] This is an overstatement: it is, of course, possible to reveal regularities simply and elegantly in an item-and-arrangement framework without abstract underlying forms, as is obvious in the treatment of Persian verb stems by Hodge (1958). In keeping with the spirit of the model in which this paper is presented, however, I have posited single underlying forms for verb stems whose alternations can be described by rules that make generalizations.

2.1 CONSONANTAL ALTERNATIONS

In this section I shall discuss those KP verbs whose consonantal alternations are regular enough to be described by general rules, and those whose alternations can be described by minor rules that affect more than one verb. The table in (16) contains examples of some of the verbs under discussion; each example is followed by a number in parentheses which indicates the total number of verbs exhibiting that particular alternation. Since there are only 231 verbs, 166 of which (including the twenty-three invariants) exhibit no consonantal alternation, a class with five members is proportionately large. The past stems are those which appear before |T|; the present stems appear before the present participle [ân] or the affixes, all of which begin with vowels. In general, past stems can be derived from present stems more easily than the reverse.

(16)

Present	Past		
raw	raf	'to go'	(2)
yâb	yâf	'to find'	(5)
afrâz	afrâš	'to elevate'	(2)
sâz	sâx	'to build'	(18)
šnâs	šinâx	'to know'	(1)
frôš	furôx	'to sell'	(1)
xâh	xâs	'to want'	(4)
dâr	dâš	'to have'	(9)

In the past stems, only the voiceless spirants *f s š x* appear stem-finally. In the present stems, *b w s z š r h* appear. Table (17) summarizes the alternations:

(17)

Present (/___ V)	Past (/___ t)
b, w	f
h	s
s, z, r	š
s, z, š	x

Let us ignore present stem-final *r* for the moment. In the discussion of labial consonants in DKP (9) it was shown that *w* could be derived from several different underlying segments, including |b| and |f|. If |v| is the final segment in the form underlying *raw* ~ *raf*, all of the stem-final consonants in (17) except *r* are obstruents. Rule (8) above spells the past marker as *t* after obstruents, and *d* after sonorants. After rule (8) has applied, the obstruent cluster assimilation/dissimilation rule DKP (8) devoices and spirantizes |b v| to *f* and |z s| to *s*.[13] More changes are necessary, of course, because most of the obstruents in (17) change their point of articulation as well as their manner; this will be dealt with directly. Rule DKP (8), which does not apply in E, must be annotated so that it applies to verb stem-final obstruents in all speech styles.

In some cases, present stem-final *s z š* must be velarized to *x*, and in some cases *s* and *z* must be palatalized to *š*. The first of these alternations (which is more general than the second by a ratio of 20:3) is the relic of old stems in final *č*; intervocalically, the *č* was voiced to *ǰ* and then depalatalized to *z* (Darmesteter, p. 63); in the past forms, the *č* was velarized to *x* (Darmesteter, p. 203). In a synchronic analysis, there appears to be nothing to be gained from positing *č* as the final segment of these verbs. Accordingly, the present stems in final *s z š* are taken as the base forms, and a rule given to velarize these segments:

(18)

$$\begin{bmatrix} -\text{sonorant} \\ +\text{consonantal} \\ +\text{coronal} \\ +\text{continuant} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{anterior} \\ -\text{coronal} \\ +\text{back} \end{bmatrix} / \text{V} ___ + \text{t}$$

("V ___ + C" stands, in these rules, for the environment in which these alternations take place: the end of a verb stem before the past marker. The latter will be spelled *t*, *d*, or *T* as the circumstances warrant.) In the case of verbs in |z|, the output of (18) will be γ, which is devoiced to *x* by rule DKP (8).

The three verbs in final *s* or *z* whose past stems end in *š* must not undergo (18). They can escape it by means of a feature [− rule 18], which makes them more marked than the stems that do undergo (18) (see section 2.4). Having escaped (18), they undergo (19):

(19)

$$\begin{bmatrix} -\text{sonorant} \\ +\text{consonantal} \\ +\text{anterior} \\ +\text{coronal} \\ +\text{continuant} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{high} \\ -\text{anterior} \end{bmatrix} / \text{V} ___ + \text{t}$$

The input to (19) must be specified [+ continuant] because stem-final |d| does not become *š*. It becomes *s*, regularly, by rule DKP (8).

It is now necessary to decide what to do about stems in *r* ~ *š*. *r* is a sonorant, and |T| appears as *d* after sonorants, as indeed it does after eight other verbs whose past stems end in *r*. The nine verbs in question here, however, have past stem-final *š* before *t*. They are descended from verbs in final *rš* (Darmesteter, pp. 83, 208-9); it seems best, again, to consider their base forms to end in |r| in a synchronic analysis. It is necessary somehow to "obstruentize" |r| before rule (8) spells |T| as *t* in order to derive the correct forms.

One obvious tactic is to assign the feature [− sonorant] to just those |r|'s which turn into *š* before |T|, and the feature [+ sonorant] to all the other |r|'s in the language. But aside from the nine verb stems that exhibit this alternation, there is not a shred of evidence in KP for this kind of "absolute neutralization."[14] Positing a special underlying segment which merges everywhere with another underlying segment after doing its dirty work, except in the tiny number of forms that it was designed to "explain" is, to my mind, the sort of hocus-pocus allowed by the model that generative phonologists ought to be trying to avoid as they become more concerned with phonetics. The use of a diacritic feature attached to the nine |r|'s which turn into *š* would be only a notational variant of this tactic.

It seems to me that the best solution to this problem is to call an exception an exception, and to have these nine verb stems undergo a special rule which obstruentizes |r| before |T|. In this way the entire verb stems, rather than a single segment, will be marked as the exceptions that they are. A way of preventing this obstruentization rule from applying to the other underlying |r|'s will be discussed in section 2.4. While it would be somehow more elegant to have the rules that spell grammatical formatives apply before rules of this type, it is apparently impossible in this and other cases. Before rule (8) spells |T|, then, the nine stems in *r* ~ *š* must undergo the following rule:

(20)

$$\begin{bmatrix} +\text{consonantal} \\ +\text{sonorant} \\ -\text{nasal} \\ -\text{lateral} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{sonorant} \\ -\text{anterior} \end{bmatrix} / \text{V} ___ + \text{T}$$

|h| is the final segment of four stems whose past variants end in *s*. The original stem of the four verbs in *h* ~ *s* ended in *d* (Darmesteter, pp. 208-209), which spirantized to *s* before *-ta* and was replaced by *h* intervocalically, as in *hvādāmi* > *xwāham* 'I want' (Darmesteter,

[11] See Richard Stanley, *Boundaries in Phonology* (Bloomington: Indiana University Linguistics Club, 1971), p. 30.

[12] See Wallace Chafe, "The Ordering of Phonological Rules," *International Journal of American Linguistics* 34:115-136; and Harris, p. 65.

[13] DKP (8) states that in a cluster of two obstruents, the first must agree in voicing with the second; furthermore, if the second is a stop, the first must be or become a continuant. This is an ancient rule in the language, having first entered Iranian more than one and a half millennia ago. See H. Hübschmann, *Persische Studien* (Strassburg: Trübner, 1895), pp. 111-115.

[14] Paul Kiparsky, *How Abstract is Phonology?* (Bloomington: Indiana University Linguistics Club, 1968).

p. 71). The base forms should now end in |h|, which is changed to a dental before T, (the reverse of the historical change of PIA *s to Old Iranian *h), by rule (21):

(21)

$$\begin{bmatrix} -\text{sonorant} \\ +\text{consonantal} \\ +\text{continuant} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{consonantal} \\ +\text{anterior} \\ +\text{coronal} \end{bmatrix} / \text{V} __ + \text{T}$$

One verb with a past stem in *š* has a present stem in *rd*: *gašt* 'he wandered', *mīgardad* 'he wanders'. (This verb, which is cognate to Sanskrit *vartati* and Latin *vertō*, is the sole survivor of a group which analogically developed a past stem in *š* and fell together, except for the curious present stems, with the other verbs in *r* - *š* [Darmesteter, p. 83].) Rule (20) should thus be preceded by a rule simplifying triconsonantal clusters:

(22)

$$\text{C} \rightarrow \emptyset \; / \text{C} __ + \text{C}$$

While this rule accounts for only one verb, it is more general than it looks: it also accounts for the derivation of D and C *hafdah* 'seventeen' and *haždah* 'eighteen' from |haft| 'seven' and |hašt| 'eight' plus |dah| 'ten', so the rule can be stated in phonological terms, with no reference to morphological categories other than the obligatory boundary.

Nasal consonants are also involved in verb stem alternations. Specifically, present stems in final *mb*, *nd*, and *n* alternate with past stems in *f*, *s*, and *ø* (zero): that is, these verbs must appear to rule (8) as if the nasal were not there, since |T| is *t* after the ones which end in obstruents, and *d* after the ones which end in a vowel (before the nasal, which is deleted). The simplest derivation for these forms is for them to undergo a rule which deletes the nasal, after which the other changes necessary are effected by rule DKP (8):

(23)

$$\begin{bmatrix} +\text{consonantal} \\ +\text{nasal} \end{bmatrix} \rightarrow \emptyset \; / \text{V} __ (\text{C}) + \text{T}$$

Rule (23) applies before rule (22).

All of the rules discussed so far have operated on base forms which are identical to present stems. As noted above, this is the way most Persian verb stem alternations work, although there are some verb stems, to be discussed below, whose alternations are more easily described if the past stems are considered to be the base forms. A list of verbs is given in the appendix, in which it can be seen that the base forms are identical, except for differences common to all morphemes of the language, to one of the allomorphs of the stem.

2.2 VOCALIC ALTERNATIONS

Seventeen verbs whose present stems end in a low vowel, which may or may not be followed by *r*, have past stems in final *d(r)*. Considering the base forms to be identical to the present stems, we can state a rule to describe the alternation as follows:

(24)

$$\begin{bmatrix} \text{V} \\ +\text{low} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{high} \\ +\text{back} \end{bmatrix} / __ (\text{r}) + \text{d}$$

This alternation is the relic of an ancient causative infix (Darmesteter, pp. 191-195). The seventeen verbs that exhibit it form an unproductive class which should be marked with a feature [+ rule 24].

Two more rules are needed to describe the nonunique vocalic alternations of KP verb stems; other vocalic alternations are either peculiar to one verb or are combined with other strange alternations, and will be discussed in section 2.4. Between a present stem final vowel and an affix, *y* is inserted, as in *mīšuyad* 'he washes', from |mī + šu + ad|. The rule for this is as follows:

(25)

$$\emptyset \rightarrow \begin{bmatrix} +\text{sonorant} \\ -\text{syllabic} \\ -\text{consonantal} \\ -\text{back} \end{bmatrix} / \text{V} __ + \text{V}$$

This rule applies in places other than the verb system, too, so it needs no morphological features. When a nominalizing suffix |î| is added to a form that ends in a vowel, *y* is added as a transitional element, as in |bālā| 'high' + |î| → *bālāyī* 'height' (Farhādi, p. 101).

In D and C, a present stem-final |h| (which changes to *s* in past stems) is changed to *y*. This is the only case of a glottal becoming a glide between two low vowels (cf. rule DKP [3]). The variation is shown by F *mījahad*, C *mījaye* 'he jumps'. The rule can be stated as follows, with the morphological environment necessarily included, since it does not apply elsewhere to |h| between low vowels:

(26)

$$\begin{bmatrix} -\text{sonorant} \\ -\text{consonantal} \\ +\text{continuant} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{sonorant} \\ -\text{back} \end{bmatrix} / \text{V} __ + \text{AFFIX}$$

2.3 AUGMENTATIVE ALTERNATIONS

109 of the 234 verbs have past stems that are one or two segments longer than their present stems. 100 of them are in what I have referred to as the '*î* class' verbs, the productive class: when new verbs are coined, they are put into this class, and a few old alternating verbs have been reclassified into it, with the present stem plus *î* replacing the older past stem. Substantives are denominalized by means of the '*î*-augment': *raqs* 'dance' gives *raqsīdan* 'to dance'. In addition to this class, nine other verbs have past stems in final *d*, *ma*, *uf*, *is*, and *is*, with present stems in which these pieces are missing.

The easiest way to deal with these verbs is to posit a special boundary between what is retained of the stem in both tenses and what is deleted in the present stem. This boundary will be symbolized by ≠; anything after it is deleted in nonpast forms. While the need for boundaries of different strengths in phonological representations is well documented (see Stanley), it is really too easy to posit a ≠ boundary whenever it is convenient to do so. The *î*-augment acts like a morpheme, even in those cases in which it seems to carry no semantic load, and there is nothing to prevent its being preceded by a special boundary; but the other "extra pieces" are in no sense morphemes, although their historical antecedents are often clear enough.[15] Positing a boundary which has the effect of deleting segments after it is, unless the rule is very carefully formulated, equivalent to claiming that the deletion is phonologically conditioned. I do not want to make such a claim: I find it doubtful in the extreme, for instance, that a KP speaker's knowledge that the *f* that appears after *gir* in *giriftam* 'I took' does not appear in *mīgīram* 'I take' is knowledge about his phonology. There is no phonological reason for these alternations; they do not take place because the boundary is there — the boundary is there *in the description* because the alternations take place. It is unlikely that, except in the case of the *î*-augment verbs, KP speakers have a single base form "stored" in their lexica for these verbs. They probably learn them as practically suppletive allomorphs.

Still, the analyst's job is to describe observable regularities, not undiscoverable synaptic connections. If a rule is needed to account for 100 forms, and that rule is made simpler if it is generalized to account for nine more forms, one is duty bound to state the rule as generally as possible. In the case of the augmentative stems, the rule should be stated, as far as possible, in morphological terms, in order to avoid any implication that a phonological cause is behind the overt phonological effect. The rule, then, looks like this:

(27)

$$\text{V}_1^1 \text{C}_0 \text{V}_0^1 \rightarrow \emptyset \; / \; \text{STEM} \neq __ + [-\text{past}]$$

When a substantive like |raqs| 'dance' or |xušk| 'dry' is denominalized, a transformation adds |≠ î| to it. The other augmentative verb stems simply have the boundary ≠ in their base forms.

"Augment" is, of course, a poor name for a phonological chunk from the end of a verb stem, but it must suffice for now, despite the implication that it has something to do with the Indo-European augment, which is found among Iranian languages nowadays only in Yaghnabi.

2.4 EXCEPTIONAL VERBS

There remain for consideration sixteen verbs whose alternations are unique. Three of them are suppletive; they are (with the past stem first) *bū* - *ast* 'to be' (there is actually a second present stem *bāš* for this verb); *dī* - *bīn* 'to see'; and *kar* - *kun* 'to do'. All of these occur very frequently, which is probably the reason for their retention of alternations lost in other verbs.

The thirteen other peculiar verbs show partial similarity in their stems, but have other alternations which are irregular. *pux* - *paz* 'to cook', for example, has the regular *x* - *z* alternation, but its vowel alternation is that of the verbs accounted for by rule (24), and is unlike other *x* - *z* verbs, such as *sāx* - *sāz* 'to build'. Another, *dā* - *dih*, of which the C present stem is simply *t*, shares no pattern with any other verb.

How are these alternations best to be accounted for? On the one hand, it is clear that whenever possible, rules already present in the grammar should do the work of accounting for alternations like those exhibited by *pux* - *paz*; on the other hand, if a special rule must be written to account for a unique alternation, why should it not describe the whole alternation? In addition, why should unique alternations be described by

[15] See the verbs listed in section 1.1 of the appendix, and the discussion of these verbs in Darmesteter (1883) and Paul Horn, *Neupersische Etymologie* (Strassburg: Trübner, 1893).

rules at all? If the verb stems exhibiting them are learned by native speakers as suppletive stems, as they no doubt are, perhaps both stems should be listed in the lexicon and the matter pursued no further.

I think that the second question can be answered by the statement that a generative grammar is written in terms of rules, but that this does not imply that everything the grammar describes is rule-governed behavior. Chafe (p. 117) recognizes this:

> At the moment I know of no way to determine precisely how many rules of a synchronic set represent a speaker's tacit knowledge—how deeply he has internally reconstructed in forming subconscious generalizations about his language. If individuals vary, no such determination may be possible. Perhaps a linguist can do no better than to posit the system which a maximally efficient rule user would operate with, all the while realizing that no human being is maximally efficient.

Thus a decision to describe *both* regular and irregular phenomena by rules does not entail a suggestion that all or even most KP speakers "know" these rules.

Similarly, it seems unwarranted to exclude irregular or unique verbs from the general rules which are needed anyway to describe regular alternations. Where there is a regularity, it should be called a regularity, and should not be penalized for appearing next to an irregularity. The problem is the same as the often-cited one of how to say that the past of *take* is *took*.

Having made the philosophical decision to describe everything by rules, I must proceed to show how this is to be done. Suppose that there are two kinds of rules in the grammar: general rules and minor rules. General rules apply to all morphemes or strings that meet their structural description, and minor rules apply to only those morphemes or strings that are marked "plus" for those minor rules. This information can be conveyed by means of marking conventions, as follows:

(28)

(a) [U rules $G_1 \ldots G_j$] → [+ rules $G_1 \ldots G_j$]

(b) [U rules $M_1 \ldots M_j$] → [− rules $M_1 \ldots M_j$]

where $G_1 \ldots G_j$ is the set of general rules, and $M_1 \ldots M_j$ is the set of minor rules.

Morphemes which are unmarked for all rules undergo all general rules and no minor rules; morphemes which are marked for a general rule do not undergo it; and morphemes which are marked for a minor rule do undergo that minor rule. Only *M*'s are counted for purposes of complexity, and the exceptionality of a morpheme is measured by the number of *M*'s associated with it. (This is, I suspect, one of the better ways of accounting for the greater number of rules which must be applied to Deliberate and Colloquial forms as opposed to Formal ones—see the end of section 1.6.2 above.)

For example, consider rule (20) above, by which |r| is obstruentized before |T|. Only nine verbs are affected by this rule, the thirteen other verbs with stem-final |r| and all the other |rt rd| sequences in the language being unaffected by it. Rule (20) is then a minor rule, and its unmarked application is "minus"; the nine verbs referred to are [M rule 20]. Similarly, the eighteen verbs whose present stems contain |a| or |ā| which is changed to *ā* in the past tense are [M rule 24], the rule that changes the vowel, but they are [U rule 20], since when they end in |r| they do not undergo rule (20).

The three verbs in stem-final |s z| whose past stems do not end in *x* by rule (18) but in *š* by rule (19) are [M rule 18], since they should but do not undergo it, and [M rule 19], since they should not but do undergo it. A verb like *pux - paz* is [M rule 24], the rule that changes the vowel, but [U rule 19], because the change of *z* to *x* is regular.

I shall not state here the host of quite uninteresting minor rules necessary to account for the sixteen exceptional verbs, since from an examination of the allomorphs it is obvious in all cases what the rule must be. Aside from the sixteen special rules needed for these verbs, we see that twelve general rules and three minor rules represent the entire descriptive apparatus necessary, when it is added to the devices already needed in the grammar for the phonology of the language, to describe the morphology of the Persian verb system as it appears in Kabul, Afghanistan.

APPENDIX

This appendix is a list of 131 verbs which, together with the *i*-augment class, form the corpus of this study. The verbs are all of those, excluding synchronically derived causatives, in Haim's *Shorter Persian - English Dictionary* (Tehran: Y. Beroukhim and Sons, 1963). Each verb

is cited with the past stem first, separated by a dash from the present stem; an alphabetic representation of the underlying form of the verb stem follows, with its gloss and the infinitive of the verb, the traditional citation form. This last is shown for the convenience of readers who wish to look up the verbs in other sources. The order of the forms within the various subsections follows that of the Perso-Arabic alphabet. Notes on rule features appear at the end of subsections containing verbs which undergo minor rules or do not undergo general rules.

1. Invariants

āgan	|āgan|	'fill'	āgandan[16]
āwar	|āvar|	'bring'	āwardan
afsar	|afsar|	'freeze'	afsardan
afšān	|afšān|	'scatter'	afšāndan
afkan	|afkan|	'throw'	afkandan
bāf	|bāf|	'weave'	bāftan
parur	|parur|	'foster'	parurdan
xān	|xān|	'read'	xāndan[17]
xor	|xor|	'eat'	xordan
rān	|rān|	'drive'	rāndan
rēs	|rēs|	'spin'	rēstan
sitā	|sitā|	'take'	sitādan
sitar	|star|	'shave'	sitardan
suf	|suf|	'pierce'	suftan
šān	|šān|	'show'	šāndan
šikaf	|škaf|	'open'	šikaftan
šikāf	|škāf|	'split'	šikāftan
kuš	|kuš|	'kill'	kuštan
kan	|kan|	'dig'	kandan
gusār	|gusār|	'absorb'	gusārdan
gastar	|gastar|	'spread'	gastardan
lumbān	|lumbān|	'gum'	lumbāndan
mān	|mān|	'stay'	māndan

All of the above verbs stem in final |n| are [− rule 23]. |rēs| 'to spin' and |kuš| 'to kill' are [− rule 18].

2. Consonantal alternations

2.1 Labials

āšuf - āšub	|āšub|	'be disturbed'	āšuftan
tāf - tāb	|tāb|	'shine'	tāftan
raf - raw	|raw|	'go'	raftan
šif - šiw	|šiv|	'enamour'	šiftan
kuf - kub	|kub|	'grind'	kuftan
yāf - yāb	|yāb|	'find'	yāftan
firēf - frēb	|frēb|	'deceive'	firēftan

2.2 Dentals and palatals

2.2.1 *x* - *z*

āx - āz	|āz|	'draw'	āxtan
āmox - āmoz	|āmoz|	'learn'	āmoxtan

16 In the interest of simplicity, stress is not marked on the forms cited in the appendix. All verbs receive stress on the last syllable of the stem except when a stressed Aspect marker is present or when the form appears in the infinitive, in which case the last syllable is stressed.

17 These verbs begin with the cluster *xw* in the literary language, but in the spoken language this cluster has been almost uniformly simplified to *x*.

âmêx - âmêz	âmêz	'mix'	âmêxtan
âwêx - âwêz	âwêz	'hang'	âwêxtan
afrôx - afrôz	afrôz	'kindle'	afrôxtan
andâx - andâz	andâz	'throw'	andâxtan
andôx - andôz	andôz	'accumulate'	andôxtan
angêx - angêz	angêz	'provoke'	angêxtan
pardâx - pardâz	pardâz	'pay'	pardâxtan
parhêx - parhêz	parhêz	'abstain'	parhêxtan
tâx - tâz	tâz	'rush'	tâxtan
dôx - dôz	dôz	'sew'	dôxtan
rêx - rêz	rêz	'pour'	rêxtan
sâx - sâz	sâz	'build'	sâxtan
sipôx - spôz	spôz	'pierce'	sipôxtan
sôx - sôz	sôz	'burn'	sôxtan
gudâx - gudâz	gudâz	'melt'	gudâxtan
nawâx - nawâz	navâz	'play'	nawâxtan

2.2.2 x - x š

šinâx - šnâs	šnâs	'know'	šinâxtan
furôx - frôš	frôš	'sell'	furôxtan

2.2.3 š - s z

âγêš - âγêz	âγêz	'macerate'	âγêštan
afrâš - afrâz	afrâz	'elevate'	afrâštan
sirš - sris	sris	'knead'	sirištan
rêš - rês	rês	'spin'	rêštan
niwiš - nwis	nwis	'write'	niwištan

All of these stems are [rule 18] and [= rule 19]

2.2.4 š - r(d)

anbâš - anbâr	anbâr	'store'	anbâštan
angâš - angâr	angâr	'suppose'	angâštan
pandâš - pandâr	pandâr	'suppose'	pandâštan
dâš - dâr	dâr	'have'	dâštan
kâš - kâr	kâr	'plant'	kâštan
gaš - gard	gard	'wander'	gaštan
guzaš - guzar	gzar	'pass'	guzaštan
guzâš - guzâr	gzâr	'permit'	guzâštan
gumâš - gumâr	gumâr	'appoint'	gumâštan
nigâš - nigâr	nigâr	'paint'	nigâštan

All of the stems in section 2.2.4 are [= rule 20].

2.2.5 s - h

jas - jah	jah	'jump'	jastan
xâs - xâh	xâh	'want'	xâstan[17]
ras - rah	rah	'be saved'	rastan
kâs - kâh	kâh	'decrease'	kâstan

2.3 Nasals

bas - band	band	'tie'	bastan
paywas - paywand	paiwand	'join'	paywastan
čî - čîn	čîn	'pluck'	čîdan
rî - rîn	rîn	'defecate'	rîdan

zâ - zân	zân	'give birth'	zâdan
za - zan	zan	'hit'	zadan
suf - sunb	sunb	'bore'	suftan
guzî - guzîn	guzîn	'choose'	guzîdan
nihuf - nihunb	nihunb	'hide'	nihuftan

3 Vocalic alternations

âzmû - âzmâ	âzmâ	'test'	âzmûdan
âsû - âsâ	âsâ	'rest'	âsûdan
âlû - âlâ	âlâ	'contaminate'	âlûdan
afzû - afzâ	afzâ	'increase'	afzûdan
afšûr - afšâr	afšâr	'press'	afšûrdan
andû - andâ	andâ	'coat'	andûdan
bur - bar	bar	'carry'	burdan
paymû - paymâ	paimâ	'measure'	paymûdan
sarû - sarâ	sarâ	'sing'	sarûdan
sû - sâ	sâ	'rub'	sûdan
sipur - sipar	spar	'entrust'	sipurdan
šumûr - šumar	šumar	'count'	šumûrdan
farmû - farmâ	farmâ	'command'	farmûdan
fišûr - fišâr	fšâr	'press'	fišûrdan
namû - namâ	namâ	'show'	namûdan

All stems in section 3 are [= rule 24].

4 Augmentative alternations

Since the *-î*- augment class is the productive one in Modern Persian, it would serve no purpose to list here the 100 examples that appear in Haim's dictionary. I shall give one example of this class, and then pass on to the other augmentative stems:

xandî - xand	[xand - î	'laugh'	xandîdan

4.1 Other augmentative stems

ârâs - ârâ	ârâ = s	'decorate'	ârâstan
âma - â	[â = ma]	'come'	âmadan
istâ - ist	[ist = â]	'stand'	istâdan
aftâ - aft	[aft = â]	'fall'	aftâdan
bâyis - bây	[bâ] = is	'be necessary'	bâyistan
pazîruf - pazîr	pazîr = uf	'accept'	pazîruftan
tawânis - tawân	[tavân = is	'be able'	tawânistan
jus - ju	ju = s	'boil'	justan
dânis - dân	dân = is	'know'	dânistan
rus - ru	ru = s	'grow'	rustan
zis - zî	[zî = s	'live'	zîstan
šus - šu	šu = s	'wash'	šustan
firistâ - frist	[frist = â	'send'	firistâdan
giruf - gir	[gir = if	'take'	giriftan
mânis - mân	mân = is	'resemble'	mânistan
nigaris - nigar	[nigar = is	'regard'	nigaristan
nihuf - nih	nih = uf	'wear'	nihuftan
yâris - yâr	yâr = is	'brave'	yâristan

5 Exceptional or suppletive verbs

bû - ast / bâš		'be'	bûdan
pux - paz	= paz	'cook'	puxtan
xuf - xâb	= xâb	'sleep'	xuftan

xās - xēz	[xēz]	'rise'	xāstan
dā - dih / d		'give'	dādan
dī - bīn		'see'	dīdan
rubā - rabā	[rabā]	'seize'	rubūdan
zudā - zidā	[zidā]	'rub off'	zudūdan
sarī - sar	[sar -]	'slide'	sarīdan
šu - šaw / š	[šaw]	'become'	šudan
šikas - škan	[škan]	'break'	šikastan
šinī - šnaw	[šnaw]	'hear'	šunīdan
kar - kun		'do, make'	kardan
gorēx - griz	[griz]	'flee'	gurēxtan
gusēx - gusēl	[gusēl]	'break off'	gusēxtan
mūr - mīr	[mīr]	'die'	murdan
nišas - nišīn	[nišīn]	'sit'	nišastan
hašt - hil		'put'	haštan

Stems marked with a hyphen are [+ rule 21]; some of these stems, and all of the others, need minor rules to account for their unique alternations. No base form has been postulated for the four suppletive stems, since one stem can be derived from the other with equal facility by means of an ad hoc rule.

THE IDENTIFICATION OF TWO MU'TAZILITE MSS

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A British Museum Arabic MS on religion described by A. S. Tritton in 1952 can now be identified as the *Ziyādāt al-Sharḥ* by Abū Rashīd al-Nīsābūrī, the last important Shaikh of the Baṣrah School of the Mu'tazilah at Rayy. A work attributed to Abū Rashīd, identified as the Dīwān al-Uṣūl by Abū Rīdah, is more probably another fragment from the *Ziyādāt al-Sharḥ*. The portion of the text contained in The British Museum MS presents Kalām on Prophethood, Miracles and the Koran.

In 1952 A. S. Tritton published a description of an unidentified Arabic MS (Br. Mus. Or. 8613) along with several pages of the text.[1] The extant 116 folios were identified simply as a fragment of a late Mu'tazilite theological work. In this brief notice I will argue that this MS should be identified as a part of the *Ziyādāt al-sharḥ* by Abū Rashīd al-Nīsābūrī (d. mid-fifth century, A.H.). I will offer additional evidence that another MS thought by Abū Rīdah to be a portion of Abū Rashīd's *Dīwān al-uṣūl* is probably from the same *Ziyādāt al-sharḥ* by the same author.[2]

Abū Rashīd Sa'īd b. Muḥammad b. Sa'īd al-Nīsābūrī was born probably in the middle of the fourth century A.H. in the region of Nīsābūr, and he died after 415/1025.[3] Our knowledge of his youth and of his formative education is even less precise. He is reputed to have headed a theological circle in Nīsābūr and (later?) to have associated with the Baghdad Mu'tazilites there. Eventually he became a student of the Qāḍī al-Quḍāt 'Abd al-Jabbār, won the latter's esteem, and succeeded him as Shaikh of the Baṣrah circle of Mu'tazilites in Rayy. There is no indication that anybody succeeded Abū Rashīd to that position.[4] Nor can we be quite sure when Abū Rashīd became a pupil of 'Abd al-Jabbār, who was head of the Mu'tazilite circle in Rayy from 367 until his death in 415 A.H., some 48 years. In view of Abū Rashīd's eventual succession to the head of the Mu'tazilite circle in Rayy, however, and since in the *Ziyādāt* he treats al-Sharīf al-Murtaḍā (d. 436/1044) as a contemporary, it may not be unreasonable to assign a late date to the beginning of Abū Rashīd's tutelage under the Qāḍī, perhaps close to the year 400 A.H.

Two of Abū Rashīd's writings are known to be extant, the *Ziyādāt al-sharḥ*, an edition of which I am preparing for publication, and *al-Masā'il fī l-khilāf bayn al-baṣriyīn wal-baghdādiyīn*, [Questions concerning the differences between the Baṣrah and Baghdad (Mu'tazilah)].[5] The fragment previously identified as the *Dīwān al-uṣūl* is problematic, as I mentioned above, and will be discussed in due course. The *Masā'il* are directed against the *'Uyūn al-masā'il* of the famous head of the Baghdad Mu'tazilah, Abū l-Qāsim al-Balkhī (d. 317/929). In addition, we know of a few other titles alleged to have appeared over the name of Abū Rashīd. One mentioned prominently is the so-called *Dīwān al-uṣūl*. In the *Ṭabaqāt al-mu'tazilah*, we learn that this was the result of a project headed by 'Abd al-Jabbār which he in turn put in the hands of Abū Rashīd to complete. It is said that the

[1] Arthur Stanley Tritton, "Some Mu'tazili Ideas about Religion," *BSOAS*, 14.3 (1952), 612–22.

[2] Abū Rashīd al-Nīsābūrī, *Fī l-tawḥīd (Dīwān al-uṣūl li Abī Rashīd Sa'īd b. Muḥammad al-Nīsābūrī?)*, ed. Abū Rīdah (Cairo, 1969).

[3] The point of reference is the date of 'Abd al-Jabbār's death, at which time Abū Rashīd succeeded him as head of the School in Rayy. See the following note.

[4] Ibn al-Murtaḍā, *Ṭabaqāt al-Mu'tazilah*, ed. Susanne Diwald-Wilzer, *Die Klassen der Mu'taziliten* (Wiesbaden, 1961), 116.2–13. See F. Sezgin, *GAS*, 1, 626.

[5] Berlin Glaser 12 (Ahlwardt 5125). See C. Brockelmann, *GAL*, S, 1, 344; and *GAS*, 1, 626. The first portion of the work on substances and accidents was edited by Arthur Biram under the title *Die atomische Substanzenlehre aus dem Buch der Streitfragen zwischen Basrenern und Bagdadensern* (Berlin, 1902). Max Horten followed with a free translation of the entire manuscript in *Die Philosophie des Abu Rashid* (Bonn, 1910).